

SC11100ZP  
patent application

09/592,349

**REMARKS**

In the January 21, 2003 Office Action, claims 1-21 are acknowledged as pending in the Application, wherein the Examiner has rejected claims 1-21. After entry of the Instant Response, claims 1, 2, and 4-21 remain pending. Support for the amendment of claims 1, 2, 16 and 19 may be found in Applicants' specification; no new matter has therefore been introduced.

As a preliminary matter, the undersigned thanks the Examiner for the courtesy of the several telephone interviews conducted subsequent to the April 02, 2002 Action – the same corresponding in scope and content to the January 21, 2003 Action. As stated during the interviews, the undersigned believes all claims as amended are allowable over the art of record.

Applicants specifically note that Claims 1-3 and 16 were discussed, wherein Applicants proffered argument from Jonathan Abrokwhah himself that he was not motivated to look at thicknesses greater than 5 nm since he did not believe that larger thicknesses would work and the fact that they did work would certainly be regarded by skilled artisans as an unexpected result.

SC11100ZP  
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09/592,349

**CLAIM REJECTIONS UNDER 35 U.S.C. §103(a)**

Claims 1, 4-16, 20 and 21 stand rejected under 35 U.S.C. §103(a) as purportedly unpatentable over U.S. Patent No. 5,895,929 to Abrokwhah *et al.* in view of Kimura and Abrokwhah *et al.* ('739). The Examiner suggests that, with respect to claims 1, 4-13, 15, 16 and 20, Abrokwhah ('929) discloses a HFET with a substrate 10 of GaAs, with AlGaAs intermediate layers, with layer 16 of GaAs, delta doped layer 22, InGaAs channel layer 23, AlGaAs layer 24 and GaAs cap layer 25. The Examiner further suggests that Abrokwhah ('929) discloses a gate contact 30 having sidewalls 35 with the layer 25 partly removed. While the Examiner admits that Abrokwhah ('929) does not show layer 22 as comprising GaAs, the Examiner suggests that it would have been obvious to form layer 22 with GaAs in order to demonstrate bandgap discontinuity. The Examiner further suggests that since layer 22 is delta doped, layer 22 would have some undoped material on either face. The Examiner also proposes that implantation in the Abrokwhah ('929) disclosure is performed before layer 25 is removed. The Examiner further suggests that Kimura discloses a FET where an i-GaAs gate layer demonstrates width on the order of the gate contact. Finally, the Examiner proposes that it would have been obvious to apply the Kimura technique to the Abrokwhah ('929) device "for the advantage shown".

As a preliminary matter, Applicants are without notice and/or understanding as to what "advantage" the Examiner is referring to. The Examiner makes reference to "the advantage shown (see abstract)", ostensibly in support of the synthetic combination of Abrokwhah ('929) with the Kimura reference. Applicants are affirmatively unaware of which abstract the Examiner intends to reference. The abstract of Abrokwhah ('929)? The abstract of Abrokwhah ('739)? Kimura's abstract? Applicants' own abstract?

Applicants are wholly unable to identify or otherwise ascertain any "advantage" having been demonstrated or otherwise referenced in any of the abstracts or, for that matter, in any combination of the same. Applicants would remind the Examiner that the Office "cannot simply reach conclusions based on its own understanding or experience – or on its assessment of what would be basic

SC111002P  
patent application

09/592,349

knowledge or common sense"; rather, the Examiner must point to some concrete evidence in the record in support the Office's findings of obviousness. *See, In Re Zurko*, 258 F.3d 1379 (2001) where the court found conclusions of obviousness lacking substantial evidentiary support to constitute reversible error on the part of the PTO.

**TO THE EXTENT THAT THE "ABSTRACT" HAS BEEN VAGUELY REFERENCED SO AS TO LEAVE APPLICANTS WITH NO MEANS FOR ASCERTAINING WITH ANY CERTAINTY WHAT "ADVANTAGE" THE EXAMINER INTENDS TO IDENTIFY AS MOTIVATION FOR COMBINING THE CITED REFERENCES, APPLICANTS RESPECTFULLY REQUEST THAT THE EXAMINER WITHDRAW THE FINALITY OF THE PENDING ACTION SO THAT APPLICANTS' MAY BE GIVEN FAIR PROCEDURAL OPPORTUNITY TO FORMALLY RESPOND TO THE EXAMINER'S CONCERNS AS THEY RELATE TO THE PROPERLY IDENTIFIED REFERENCE.**

Notwithstanding the preceding, Applicants herein respectfully traverse the rejections. In order to establish a *prima facie* case of obviousness under §103, three basic criteria must be met: (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; (2) there must be a reasonable expectation of success; and (3) the prior art reference (or references when combined) must teach or suggest **all of the claim limitations**. (see MPEP §2143; *emphasis added*).

With respect to the first requirement as it relates *inter alia* to the rejection of independent claims 1 and 16, the pending Action fails to provide a reasoned basis for the suggestion or motivation to modify or combine the disclosure of Abrokwhah ('929) with that of Kimura and/or any other teaching or reference of record. To the extent that such a suggestion or motivation has not been identified, under the second requirement, there can accordingly be no reasonable expectation of success.

SC111002P  
patent application

09/592,349

Moreover, even if the Abrokwhah disclosures were combined with that of Kimura and/or any other reference, knowledge or teaching of record, such a combination would not lead a person skilled in the art to develop Applicants' invention; namely, a method of manufacturing a semiconductor component with the described layer of undoped gallium arsenide having "a thickness of at least six to approximately twelve nanometers". (See claim 1 as amended; *emphasis added*). Accordingly, Abrokwhah taken in combination with the disclosure of Kimura fails to teach each and every limitation of Applicants' invention. Applicants therefore submit that the §103(a) rejection of independent claims 1 and 16 as amended would be improper and respectfully request that the Examiner withdraw rejection of the same.

Notwithstanding the recitation of novel elements in each of claims 4-13, 15 and 20, inasmuch as these claims variously depend from and incorporate all of the limitations of their corresponding independent claims 1 and 16 as amended, dependent claims 4-13, 15 and 20 are similarly allowable over the art of record. Applicants therefore respectfully request that the Examiner withdraw §103(a) rejection of the same.

Notwithstanding the recitation of novel elements in claims 14 and 21, inasmuch as these claims depend from and incorporate all of the limitations of independent claim 1 as amended and dependent claim 20 (which depends from independent claim 16 as amended), dependent claims 14 and 21 are similarly allowable over the art of record. Applicants therefore respectfully request the Examiner to withdraw §103(a) rejection of the same.

Notwithstanding the recitation of novel elements in claim 19, inasmuch as this claim depends from and incorporates all of the limitations of independent claims 16 as amended, dependent claim 19 is similarly allowable over Abrokwhah ('929) in combination with Kimura in view of Abrokwhah ('739). Applicants therefore submit that claim 19 is also in condition for allowance and respectfully request that the Examiner withdraw §103(a) rejection of the same.

Notwithstanding the recitation of novel elements in claims 17 and 18, inasmuch as these claims depend from and incorporate all of the limitations of independent claim 16 as amended, dependent claims 17 and 18 are similarly allowable over

SC11100ZP  
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09/592,349

Abrokwah ('929) in view of Abrokwah ('285). Applicants therefore respectfully request the Examiner to withdraw §103(a) rejection of the same.

SC11100ZP  
patent application

09/592,349

**CONCLUSION**

The cited references have been reviewed and are not believed to affect the patentability of claims 1, 2 and 4-21 as amended. Accordingly, reconsideration and allowance of all pending claims is earnestly requested in order to advance prosecution in the case.

No amendment made herein was related to the statutory requirements of patentability unless expressly stated; rather any amendment not so identified may be considered as directed *inter alia* to clarification of the structure and/or function of the invention and Applicants' best mode for practicing the same. Additionally, no amendment made herein was presented for the purpose of narrowing the scope of any claim, unless Applicants have argued that such amendment was made to distinguish over a particular reference or combination of references. Furthermore, no election to pursue a particular line of argument was made herein at the expense of precluding or otherwise impeding Applicants from raising alternative lines of argument later during prosecution and/or Appeal. Applicants' failure to affirmatively raise specific arguments is not intended to be construed as an admission to any particular point raised by the Examiner.

Should the Examiner have any questions regarding this Response or feel that a telephone call to the undersigned would be helpful to advance prosecution, the Examiner is invited to call the undersigned at the number given below.


Respectfully submitted,

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